C 82409 (Pages : 4) Name.....

Reg. No.

SECOND SEMESTER B.A./B.Sc. DEGREE EXAMINATION, APRIL 2020

(CBCSS—UG)

B.C.A.

BCA 2C 04—OPERATIONS RESEARCH

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer **all** *the questions.*
Each question carries maximum of 2 *marks.*
Ceiling 20 *marks.*

1. Write any *two* applications of OR ?
2. What do you mean by an objective function of an LPP ?
3. What are the basic assumptions of a LPP ?
4. What do you mean by an artificial variable ?
5. What do you mean by basic feasible solution of a Transportation problem ?
6. What are Assignment problems ?
7. Define Travelling salesman problem.
8. What do you mean by Degeneracy in a TP ?
9. What is network analysis ?
10. What is meant by a Critical path ? Why should we know which activities are critical ?
11. What is dummy activity ?
12. Distinguish between 'Slack' and 'float'.

(Ceiling : 20 marks)

Section B (Short Essay Type Questions)

Answer **all** *the questions.*
Each question carries 5 *marks.*
Ceiling 30 *marks.*

13. What are the limitations of OR ?

14. Solve Graphically :

Maximize = $3x_1 + 5x_2$

subjected to : $x_1 + 2x_2 \leq 2{,}000$

$x_1 + x_2 \leq 1{,}500$

$x_2 \leq 600$

$x_1, x_2 \geq 0.$

15. A manufacturer of furniture makes two products, chairs and tables. Processing of these products is done on two machines A and B. A chair requires 2 hours on machine A and 6 hours on machine B. A table requires 5 hours on machine and no time on machine B. There are 16 hours of time per day available on machine A and 30 hours on machine B. Profit gained by the manufacturer from a chair is Re. 1 and from a table is Rs. 5 respectively. Formulate the problem into a LPP in order to maximise the total profit ?

16. Find the initial solution of the following TP by using Lowest cost entry method :

	D_1	D_2	D_3	*Supply*
O_1	2	7	4	5
O_2	3	3	1	8
O_3	5	4	7	7
O_4	1	6	2	14
Demand	7	9	18	

17. Find the optimal solution to the following Assignment problem showing the cost for assigning workers to jobs :

$$\begin{array}{c} \\ \textit{Workers} \end{array} \begin{array}{c} \begin{array}{ccc} x & y & z \end{array} \\ \begin{bmatrix} 18 & 17 & 16 \\ 15 & 13 & 14 \\ 19 & 20. & 21 \end{bmatrix} \end{array}.$$